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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/666,271	09/20/2000	TOSHIYUKI SEKIYA	35.C14800	8367

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EXAMINER	
PHAM, HAI CHI	

ART UNIT	PAPER NUMBER
2861	

DATE MAILED: 02/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/666,271	SEKIYA ET AL.	
	Examiner	Art Unit	
	Hai C Pham	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-23 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 20 September 2000 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. **Figures 11 through 24** should be designated by a legend such as --PRIOR ART-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1, 3, 5-6, 8, 10 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicants' Admitted Prior Art (referred hereinafter as AAPA).

AAPA discloses a "*conventional light quantity correction, the light quantity correction for the in-line light emission unevenness common to the SLED chips*" [Specification page 9, lines 10-13], the light quantity correction being used in a recording control apparatus, which performs recording on a recording medium by using a recording head, said apparatus comprising a recording head which includes at least one recording element array in which plural recording elements are aligned long a predetermined direction (recording chips 200 each including a plurality of light emitting diodes, Fig. 22), a driving correction table (correction memory 352, Fig. 24), which includes pixel correction data for correcting either a recording driving characteristic or a light emission characteristic of each recording element constituting said recording element array by the pixel unit of image data (a goal set in AAPA, namely for correcting "*light emission unevenness, i.e., light quantity unevenness, common to the entire chips occurs due to various physical characteristic distributions which are originated from an internal wiring impedance, ...*") [Specification page 8, lines 24-27], and in which the pixel correction data is provided corresponding to plural lines of the image data, and driving control means (control system 350), which modifies a recording driving time of each recording element of said recording element array by the pixel unit, on the basis of said driving correction table including the pixel correction data of the plural lines (see Specification, section "Field of the Invention").

The method claims 6 and 8 are deemed to be clearly anticipated by functions of the above structures.

5. Alternatively, claims 1, 3, 5-6, 8, 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Deguchi et al. (U.S. 6,133,984).

Takeuchi discloses an image processing apparatus and method, which performs recording on a recording medium by using a recording head, said apparatus comprising said recording head which includes at least one recording element array in which plural recording elements are aligned long a predetermined direction (recording head having light-emitting elements arrayed in a single row or plural rows), a driving correction table (correction data memory 12, Fig. 7), which includes pixel correction data for correcting either a recording driving characteristic or a light emission characteristic of each recording element constituting aid recording element array by the pixel unit of image data (correction data memory 12 storing correction data for correcting unevenness of light emission characteristics, e.g., light quantity, of each light emitting section of the recording head) (col. 9, lines 19-58), and in which the pixel correction data is provided corresponding to plural lines of the image data, and driving control means (recording energy control unit) which modifies a recording driving time of each recording element of said recording element array by the pixel unit, on the basis of said driving correction table including the pixel correction data of the plural lines (col. 4, lines 48-56).

The method claims 6 and 8 are deemed to be clearly anticipated by functions of the above structures.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 2, 4, 7, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Prowak (U.S. 5,581,295).

AAPA discloses all the basic limitations of the claimed invention including the correction pixel designation means (pixel number designation counter 351, Fig. 24) for designating a correction pixel number of the pixel correction data stored in the correction memory (352), but except for the correction queue designation means for designating a correction queue of the pixel correction data stored in the correction memory.

Prowak discloses a recording apparatus comprising a gray level print head having a plurality of light emitting element arrays, wherein a plurality of data bits are used to control either exposure duration or intensities, the apparatus including odd/even correction data tables (212 and 212') which are sequentially addressed by using the pixel counter (220) and the odd/even bin table memory in a sequence suited for the type of print head.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the AAPA device with the aforementioned

teachings of Prowak. The motivation for doing so would have been to allow the data correction memory to be addressed in a direct sequence starting with data corresponding to one recording chip without simultaneously outputting data to the second recording chip.

8. Claims 11, 13, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Takeuchi (U.S. 6,052,141).

AAPA discloses all the basic limitations of the claimed invention except for the medium containing the control program.

Takeuchi discloses an image processing apparatus including a feedback loop for monitoring the intensity of the light emitted by the laser diode (6) comprised in the recording head, the data correction being stored in a correction table (LUT 37) based on which the exposure duration is controlled to modify a recording driving time of the laser diode (using the pulse width modulator 22). Takeuchi further teaches the provision of storage medium to store program codes to perform the above processes. It is well known in the art that such program codes can be generated to perform desired processes in an application device having a proper support of the structural and functional components.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a storage medium as taught by Takeuchi in the device of AAPA such that the processes indicated by AAPA can be automatically performed during each printing operation.

9. Claims 12, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Prowak and Takeuchi.

AAPA, as modified by Prowak (see rejection in above paragraph 4), discloses all the basic limitations of the claimed invention except for the medium containing the control program.

Takeuchi discloses an image processing apparatus including a feedback loop for monitoring the intensity of the light emitted by the laser diode (6) comprised in the recording head, the data correction being stored in a correction table (LUT 37) based on which the exposure duration is controlled to modify a recording driving time of the laser diode (using the pulse width modulator 22). Takeuchi further teaches the provision of storage medium to store program codes to perform the above processes. It is well known in the art that such program codes can be generated to perform desired processes in an application device having a proper support of the structural and functional components.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a storage medium as taught by Takeuchi in the modified device of AAPA such that the processes indicated by AAPA can be automatically performed during each printing operation.

10. Claims 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh (U.S. 5,687,002) in view of Takeuchi.

Itoh discloses an image forming apparatus comprising a driving means (LED driver (20) for driving each of recording elements (LED elements 100) in the recording element array on the basis of correction data for compensating a recording characteristic error of the recording element (the light output intensity of each LED element 100 being corrected based on the correction data doe each LED stored in PROM 25 such that the intensities of the LEDs are uniform) (col. 5, lines 15-27), and control means (printer controller 11) for controlling the driving means driving each recording element.

However, Itoh fails to teach the printer controller periodically changing the correction data used by the driving means.

Regardless, Takeuchi discloses an image processing apparatus including a feedback loop for monitoring the intensity of the light emitted by the laser diode (6) comprised in the recording head, the data correction being stored in a correction table (LUT 37) based on which the exposure duration is controlled to modify a recording driving time of the laser diode (using the pulse width modulator 22). Takeuchi further teaches the correction table (LUT 37) being updated to increase control precision (col. 8, lines 2-7).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Itoh by periodically rewriting the correction table as taught by Takeuchi for the purpose of increasing the control precision as suggested by Takeuchi.

With regard to claims 17-19, Itoh further teaches:

- wherein said driving means changes a driving pulse width of each of the recording elements in the recording element array on the basis of the correction data (col. 5, lines 28-35, col. 7, lines 48-61);
- storage means (PROM 25) for storing the correction data;
- wherein the recording element is a light emission element (LED 100).

The method claims 20-23 are deemed to be clearly anticipated by the combined functions of the above structures.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (703) 308-4896. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

HAI PHAM
PRIMARY EXAMINER

February 7, 2004